

948886



**2019 USS LEAD ZONE 1 AND 3
DEFINED PROPERTIES
EXCAVATION, BACKFILL, AND
TRANSPORTATION PLAN
RESIDENTIAL SOIL REMEDIATION**

**USS LEAD SUPERFUND SITE
EAST CHICAGO, LAKE COUNTY, INDIANA**

Prepared for:

The Chemours Company, LLC
1007 Market Street
D-3084
Wilmington, DE 19898

Prepared by:

PARSONS
10 South Riverside,
Suite 400
Chicago, Illinois 60606

in conjunction with



2125 Glenview Dr
Evansville, IN 47720

July 2019

This page intentionally left blank

TABLE OF CONTENTS

1.0	INTRODUCTION	1
2.0	AIR SAMPLING AND MONITORING PLAN.....	3
3.0	EXCAVATION AND BACKFILL FOR ZONE 1	4
3.1	Carrie Gosch School	4
3.1.1	Soil Excavation.....	4
3.1.2	Transportation of Impacted Soils	6
3.1.3	Backfill of Excavation.....	6
3.2	Utility Corridor 3	7
3.2.1	Excavation of Impacted Soils.....	7
3.2.2	Transportation of Impacted Soils	8
3.2.3	Backfill of Excavation.....	8
4.0	EXCAVATION AND BACKFILL ZONE 3	10
4.1	Defined Residential Properties	10
4.1.1	Pre-Construction and Post-Construction Meetings	10
4.1.2	Excavation of Impacted Soils.....	11
4.1.3	Transportation of Impacted Soils	12
4.1.4	Backfill of Excavation.....	12
5.0	SITE RESTORATION	14
6.0	REFERENCES	15

TABLES

Table 1	Summary of Total Estimated Soil Volumes to be Excavated and Total Estimated Areas to be Sodded USS Lead Defined Properties – East Chicago, Indiana.....	2
---------	---	---

FIGURES

Figure 1	Site Excavation, Backfill & Restoration Plan - 455 E148th St (Carrie Gosch School)
Figure 2	Site Excavation Plan for Quadrant C - 455 E148th St (Carrie Gosch School)
Figure 3	Haul Truck Staging and Loading - 455 E148th St (Carrie Gosch School)
Figure 4	Traffic Control Route - 455 E148th St (Carrie Gosch School) and 49 th Street (Utility Corridor 3)
Figure 5	Site Excavation, Backfill & Restoration Plan – 49 th Street (Utility Corridor 3)
Figure 6	Haul Truck Staging and Loading – 49 th Street (Utility Corridor 3)
Figure 7	Site Excavation, Backfill & Restoration Plan –
Figure 8	Site Excavation, Backfill & Restoration Plan –
Figure 9	Site Excavation, Backfill & Restoration Plan –
Figure 10	Site Excavation, Backfill & Restoration Plan –
Figure 11	Site Excavation, Backfill & Restoration Plan –
Figure 12	Site Excavation, Backfill & Restoration Plan –
Figure 13	Site Excavation, Backfill & Restoration Plan –
Figure 14	Traffic Control Route – Zone 3 Residential Sites

NON RESPONSIVE

ACRONYMS

Acronym	Definition / Description
COC	Contaminant of Concern
CY	Cubic Yards
ECGP	East Chicago Gateway Partners
mg/kg	Milligram per kilogram
NS	Native Sand
RAL	Remedial Action Limit
SF	Square Feet
SY	Square Yards
TCLP	Toxicity Characteristic Leaching Procedure
XRF	X-Ray Fluorescence

This page intentionally left blank

1.0 INTRODUCTION

This Plan describes the field procedures to be implemented at select Zone 1 and Zone 3 properties with soils that have been determined to be impacted by operations associated with the former USS Lead facility in East Chicago, Indiana. This work is being conducted on behalf of the Responsible Parties in accordance with the Unilateral Administrative Order: Exterior Remedial Actions of Defined Properties in Zone 1 and 3 (CERCLA Docket V-W-19-C-006). Based on prior site investigations where soil samples were collected at discrete depths and analyzed for Contaminants of Concern (COCs), a total of nine properties within Zone 1 and Zone 3, as listed in Table 1, have been identified as properties with at least one COC detected above the associated site-specific Remedial Action Level (RAL). In general, the following procedure will be implemented by the excavation contractor (Summit) at each property for this project. Based on the current schedule, it is estimated that the field effort described in this Plan will be completed between July and October, 2019.

- 1) Conduct preconstruction meeting with representatives from Parsons, EPA and the property owner to review excavation plan and specific restoration agreements;
- 2) Identify utilities and sprinkler lines or other features/structures that may be present in the shallow subsurface;
- 3) Conduct pre-excavation survey (10-ft x 10-ft grids) and identify any features/structures to be replaced during site restoration followed by removal of any trees or bushes that may be diseased and need removal;
- 4) For the Carrie Gosch School only, stockpile clean soil overburden (from 0 to 18-inches below ground surface where discrete soil sample results indicate COC concentrations below site specific RALs) adjacent to the excavation;
- 5) At Carrie Gosch School and Corridor 3 properties, excavate impacted soils and direct load into haul trucks for direct transport to an approved off-site landfill for disposal. For the Zone 3 residential properties, excavate impacted soils and transport excavated soils to the East Chicago Gateway Partners (ECGP) Facility (former Chemours property) to be stockpiled, profiled for waste characterization, and disposed at the appropriate landfill;
- 6) After base-excavation survey (10-ft x 10-ft grids) at Carrie Gosch School, place stockpiled soils followed by clean backfill and topsoil into excavation to final grade and in accordance with site-approved specifications;
- 7) At Corridor 3 and the Zone 3 residential properties, place clean backfill and topsoil to final grade; and
- 8) After final grade survey (10-ft x 10-ft grids), site landscaping will be completed in accordance with site-approved specifications and plans as well as the restoration of any site-specific features/structures that were identified in Steps 1 and 2.

Table 1
Summary of Total Estimated Soil Volumes to be Excavated and
Total Estimated Areas to be Sodded
USS Lead Defined Properties – East Chicago, Indiana

Location	Zone	Total Est. Volume to be Excavated (CY)		Total Est. Area to be Sodded (SY)
		Manual	Mechanical	
Carrie Gosch School - 455 E 148th Street	1	71	3,549	5,961
Corridor 3 – 49th Street	1	0	1,156	1,995
NON RESPONSIVE	3	21	13	268
	3	7	71	361
	3	9	42	144
	3	11	195	398
	3	0	37	75
	3	25	229	735
	3	2	97	159

2.0 AIR SAMPLING AND MONITORING PLAN

Air sampling and monitoring to ensure compliance with the project performance standards will be conducted. Air sampling and monitoring will be performed during soil remedial action and placement activities at the Carrie Gosch School, Corridor 3, the residences in Zone 3 and for tasks at the offsite soil stockpile area located at the ECGP Facility to ensure that there is no fugitive dust from the impacted soils or fill materials. The air sampling will be conducted in accordance to the procedures presented in Section 5.0 of the Exterior Field Sampling Plan for Zone 2 (May 2018) which is included in 2019 USS Lead Zone 1 and 3 Defined Properties Addendum to the Exterior Field Sampling Plan for Zone 2 (May 2018).

Real-time particulate samplers and monitors will be utilized during the operations as detailed in Section 6.0 of the approved Health and Safety Plan (Parsons 2018 and updated in 2019). Air sampling and monitoring details for activities at the offsite stockpile area are described in Section 13 of the Health and Safety Plan (Parsons 2018 and updated in 2019).

3.0 EXCAVATION AND BACKFILL FOR ZONE 1

There are two Zone 1 sites that will be remediated as part of this project. Carrie Gosch School is located at 455 East 148th Street and Corridor 3 is located on 49th Street. All activities will be conducted in accordance with the following approved Plans:

- 2019 USS Lead Zone 1 and Zone 3 Defined Properties Addendum to the Remediation of Soil Excavation, Backfill and Vegetation Installation Storm Water Prevention Plan for Zone 2, and
- 2019 USS Lead Zone 1 and Zone 3 Defined Properties Addendum to the Remediation Action Work Plan for Zone 2 and Zone 3

3.1 Carrie Gosch School

Remediation at Carrie Gosch School will involve the excavation of approximately 3,620 cubic yards (CY) (3,549 CY by mechanical means and 71 CY by manual excavation) of impacted and nonimpacted soil. The impacted soils, based on site-specific sample results, will be transported to the approved offsite disposal area. The site will be backfilled with the clean soils that were stockpiled on site prior to excavation activities followed by the placement of topsoil to match the surrounding grade. All stockpiles will be managed according to the approved Stormwater Pollution Prevention Plan (Parsons 2018 and updated in 2019).

3.1.1 Soil Excavation

General Excavation Procedure

After an initial site survey on 10-foot centers and after removing/securing/identification-for-later-replacement any existing equipment such as sprinkler systems, a construction crew with a large capacity long-reach excavator will be used to remove clean overburden (top 16-inch layer) from Quadrant C as identified on the Carrie Gosch School Design and Sampling Plan (see Figures 1 and 2). The use of a long reach excavator will allow for greater flexibility on stockpile placement and where haul trucks need to be positioned relative to the excavation. The overburden will be placed in stockpiles (unimpacted soils) with maximum dimensions of 200 feet north to south by 10 feet east to west by 5 feet high. Soil will be stockpiled adjacent to the active excavation as space allows and Quadrant C will be accessed from the Carrie Gosch Parking lot and adjacent roadways. Air samplers will be located in accordance with the protocols referenced in Section 2.0 of this Plan, if necessary, trees will be removed from the site prior to mobilization of the excavation equipment.

The base depth of the active excavation will be monitored continuously with an on-site real time laser level to verify that the excavation does not exceed a depth of 16 inches. A base-of-unimpacted-soil survey will be conducted at the same surface coordinates (x,y) as the initial site survey to confirm that a depth of no more than 16 inches of soil has been removed from the site. Excavation will include a depth of 18-24 inches. When the excavation of the unimpacted soil has been completed and at the end of each working day, the stockpiled soil (unimpacted soils) will be covered with plastic to minimize the potential of any impacted soil (18-inch to 24-inch depth) coming into contact and cross-contaminating the unimpacted, stockpiled soil. Sand bags will be placed along the edge of the plastic and across the top of the plastic to secure the plastic to the surface of the

stockpile. After the excavation of the contaminated material is complete, the overburden material (the unimpacted stockpiled soil) will be used as backfill.

Detailed Excavation Procedure

Summit will remediate the soils within the 17 grids and 3 planter boxes identified in Figure 2. The specific sequence of steps anticipated for the east central section is as follows:

1. Excavate north to south the overburden from grids QC9-QC12-QC15-Q18 and stockpile (unimpacted soils) on grids QC10-QC13-QC-16-QC19. Place plastic over stockpiled soil.
2. Excavate north to south the impacted soils (18 to 24-inch layer of impacted soil with COCs above RALs) from grids QC9-QC12-QC15-Q18 and direct load into haul trucks for direct transport to the approved offsite disposal facility.
3. Decontaminate the excavator bucket by placing bucket over the open excavation and use a pressure washer to clean the excavator bucket. The rinse water with any sediment will fall onto the base of the excavation. Use of a long reach excavator will help limit contact of the impacted soil to only the excavator bucket.
4. Backfill soils stockpiled (unimpacted soils) on QC10-QC13-QC-16-QC19 into excavation QC9-QC12-QC15-Q18. Additional backfilling requirements are presented in Section 3.1.3.
5. Excavate north to south the overburden from grids QC10-QC13-QC-16-QC19 and stockpile (unimpacted soils) on grids QC9-QC12-QC15-Q18. Place plastic over stockpiled soil.
6. Excavate north to south the impacted soils from grids QC10-QC13-QC-16-QC19 and direct load into haul trucks.
7. Decontaminate the excavator bucket by placing bucket over the open excavation and use a pressure washer to clean the excavator bucket. The rinse water with any sediment will fall onto the base of the excavation. Use of a long reach excavator will help limit contact of the impacted soil to only the excavator bucket.
8. Backfill soils (unimpacted soils) stockpiled on QC9-QC12-QC15-Q18 into excavation QC10-QC13-QC-16-QC19. Additional backfilling requirements are presented in Section 3.1.3.

The procedure will be repeated in the northeastern section for grids QC04 and QC05 where the soil is excavated and placed into stockpiles (unimpacted soils) that extend from north to south. The crew will then mobilize to the southeastern section and use the same procedure to address grids QC20 through QC25. Although on a smaller scale, a similar procedure will be repeated one area at a time for QC01 and planter boxes QC26, QC27 and QC32. Debris larger than 6 inches in diameter that is encountered during excavation of the overburden will be separated and transported to the ECGP Facility and stockpiled for profiling and appropriate disposal. The requirements for backfilling the excavation with stockpiled soil (unimpacted soils) and with clean off-site borrow soil will be further detailed in Section 3.1.3.

During excavation, field conditions may dictate changes to the above plan. Parsons and Summit will discuss in the field and implement these changes and notify EPA.

The excavator and other equipment required to perform the excavation work will remain on the property until the work is completed. Overnight Security will be provided to watch equipment and stockpiled soils (unimpacted soils) during non-working hours.

3.1.2 Transportation of Impacted Soils

US Ecology will be responsible for transporting the impacted soil in haul trucks to the approved offsite disposal facility from the school property. Trucks will be staged and moved to the property according to the approved transportation routes shown on Figures 3 and 4. Once on the property, the trucks will be positioned as needed to be loaded by the excavation operator. The routing of the haul trucks will be adjusted as the location of the grids-to-excavate progresses from north to south. A spotter will be used to direct the trucks into position prior to loading. Parsons personnel will be responsible for live load manifesting.

Prior to exiting the excavation site, the haul trucks will be inspected by the truck driver and other on-site personnel to make sure tires are clean and there are no dirt clods that may fall onto the roadway from the haul truck. The haul trucks will travel at all times with the tarp or canopy covering the truck bed.

3.1.3 Backfill of Excavation

Each excavated grid and planter box will be backfilled with stockpiled soils (unimpacted soils) followed by placement of a 6-inch layer of topsoil. Backfilling of the excavations will be accomplished by either conventional mechanical means or by manual means. The application of each technique will be dependent on the accessibility of the mechanical equipment to the excavated area. The mechanical methods will be used in areas where the excavator and/or a skid-steer loader can access the area. All other areas will be backfilled using manual methods. A description of the topsoil qualifications is provided in the project specifications. The topsoil will be delivered to the site via the same haul routes shown in Figures 3 and 4. The haul trucks will travel at all times with the tarp or canopy covering truck bed. The topsoil may be placed on unexcavated soil so that trucks can travel into the backfill area on unimpacted soil.

Sidewalks and surface structures will be protected during backfilling activities. Plywood or rubber mats will be placed over sidewalks where equipment crosses the sidewalk. Other surface structures will be moved away from excavation activities, where practical, or will be protected by orange fence, caution tape, or similar means.

The backfill will be placed in uniform horizontal lifts of 6 inches (maximum) and compacted to 90 percent maximum dry density. For any areas to be located beneath gravel walkways, gravel parking areas, gravel driveways, or beneath movable structures, the backfill shall be compacted to a minimum of 95 percent maximum dry density. Additional backfill placement requirements are detailed in the SulTRAC USS Lead Technical Specifications (dated January 2018).

The backfill will be compacted with a manually operated compactor (i.e. jumping jack, plate compactor, walk-behind pad-foot roller). Backfill will not be placed in excavations with standing water or unstable sub-grade conditions. Backfill material will be placed in such a manner that does not disturb or damage underground utilities, structures, and tree roots.

Final grade will match pre-existing conditions with light modifications to improve drainage as needed. Topsoil will be placed and compacted in one 6-inch lift followed by placement of approximately 5,960 square yards (SY) of sod in accordance with the specifications. The topsoil will be compacted with a roller manually pulled across the surface. Any undulations created by the roller will be raked smooth and rolled again until the topsoil surface is smooth and even.

An Indiana-licensed professional surveyor will be on site as needed to confirm the excavation has been completed in accordance with the design and at various stages of backfilling. The following progress surveys will be conducted on a grid by grid basis.

- 1) Existing grade prior to excavation,
- 2) Top of impacted soil,
- 3) Base of excavation, and
- 4) Top of imported soil.

3.2 Utility Corridor 3

Remediation at Utility Corridor 3 will involve the excavation of approximately 1,160 CY of impacted soil from two quadrants (QA and QB). The impacted soils, based on site-specific sample results, will be direct loaded into haul trucks and transported to the approved offsite disposal area. The site will be backfilled with clean, imported soils to match the surrounding grade.

3.2.1 Excavation of Impacted Soils

A preconstruction coordination meeting between Summit, the pipeline companies, and Parsons, will take place prior to excavating around the pipeline utilities. After an initial site survey on 10-foot centers and after removing/securing/identification-for-later-replacement any existing equipment, a construction crew with a large capacity excavator will be used to excavate impacted soil from quadrants QA and QB as identified in Figure 5. These quadrants will be accessed from the adjacent roadways to the East, West, and South. Based on the approximate pipeline locations identified by a utility locating company, Summit will utilize hydro-excavation or an alternate soft-dig method to expose the pipeline and will exercise caution as to not damage the pipeline. Air samplers will be located in accordance with the protocols referenced in Section 2.0 of this Plan.

Summit will not excavate soil within 1 foot of a pipeline to prevent any accidental strikes to the pipeline during the excavation and backfill process.

The Contractor will decontaminate the excavator bucket by placing bucket over the open excavation and use a pressure washer to clean the excavator bucket. The rinse water with any sediment will fall onto the base of the excavation.

The excavator will remain on the property until the work is completed. Overnight Security will be used to monitor equipment during non-working hours. Summit anticipates that the excavation operator will load approximately 10 to 20 truckloads of excavated soil each day.

Excavation grade will be maintained by using a laser level and rod. In addition, surveying will be completed in stages so that the backfill can be placed as soon as possible. An Indiana licensed professional surveyor will be on site as needed to confirm the excavation has been completed in accordance with the design.

3.2.2 Transportation of Impacted Soils

US Ecology will be responsible for transporting the impacted soil in haul trucks to the approved offsite disposal facility. Trucks will be staged and moved to the property according to the approved transportation routes shown on Figures 4 and 6. Once on the property, the trucks will be positioned as needed to be loaded by the excavation operator. The routing of the haul trucks will be adjusted as the location of the excavation progresses from north to south. A spotter will be used to direct the trucks into position prior to loading.

The wet material excavated from around the pipeline will be transported to the ECGP Facility and offloaded. All stockpiles will be managed according to the approved Stormwater Pollution Prevention Plan (Parsons 2018 and updated in 2019).

Prior to exiting the excavation site, the haul trucks will be inspected by the truck driver and other on-site personnel to make sure tires are clean and there are no dirt clods that may fall onto the roadway from the haul truck. The haul trucks will travel at all times with the tarp or canopy covering the truck bed.

3.2.3 Backfill of Excavation

Backfilling of the excavation will be accomplished by either conventional mechanical means or by manual means depending on requirements stipulated by pipeline companies during the preconstruction meeting. The application of each technique will be dependent on the accessibility of the mechanical equipment to the excavated area. The mechanical methods will be used in areas where a skid-steer loader can access the area. All other areas will be backfilled using manual methods.

Sidewalks and surface structures will be protected during backfilling activities. Plywood or rubber mats will be placed over sidewalks where equipment crosses the sidewalk. Other surface structures will be moved away from excavation activities, where practical, or will be protected by orange fence, caution tape, or similar means.

Backfill material will consist of two types, general backfill and topsoil. Descriptions of these materials is provided in the project specifications. The clean, backfill materials will be delivered to the site via the same haul routes shown in Figures 4 and 6. The haul trucks will travel at all times with the tarp or canopy covering the truck bed. Backfill may be placed on unexcavated soil so that trucks can travel into the backfill area on unimpacted soil.

Areas within 18 inches of any pipeline will be compacted with a light weight hand-towed water-filled roller. To prevent damage to the pipeline by the compaction testing equipment, no compaction testing will be performed within two feet of either side of a pipeline.

For areas outside of two feet of either side of a pipeline, backfill will be compacted with a manually operated compactor (i.e. jumping jack, plate compactor, walk-behind pad-foot roller). The backfill will not be placed in excavations with standing water or unstable sub-grade conditions. The backfill will be placed in uniform, horizontal lifts of 6 inches (maximum) and compacted to 90 percent maximum dry density. For any areas to be located beneath gravel walkways, gravel parking areas, gravel driveways, or beneath movable structures, the backfill shall be compacted to a minimum of 95 percent maximum dry density. Additional backfill placement requirements are detailed in the SulTRAC USS Lead Technical Specifications (dated January 2018).

Final grade will match pre-existing conditions with light modifications to improve drainage as needed. Topsoil will be placed and compacted in one 6-inch lift followed by placement of approximately 2,000 SY of sod in accordance with the specifications. The topsoil will be compacted with a roller manually pulled across the surface. Any undulations created by the roller will be raked smooth and rolled again until the topsoil surface is smooth and even.

An Indiana-licensed professional surveyor will be on site as needed to confirm the excavation has been completed in accordance with the design and at various stages of backfilling. The following progress surveys will be conducted on a 10-ft by 10-ft grid.

- 1) Existing grade prior to excavation,
- 2) Base of excavation and pipeline, and
- 3) Top of imported soil.

4.0 EXCAVATION AND BACKFILL ZONE 3

Remediation at seven residential sites will involve the excavation of approximately 760 CY total of impacted soils (685 CY by mechanical means and 75 CY by manual excavation). The impacted soils will be transported to the ECGP Facility. All stockpiles will be managed according to the approved Stormwater Pollution Prevention Plan (Parsons 2018 and updated in 2019). The sites will be backfilled with clean, imported soils to match the surrounding grade and then restored with appropriate landscaping. All activities will be conducted in accordance with the following approved Plans:

- 2019 USS Lead Zone 1 and Zone 3 Defined Properties Addendum to the Remediation of Soil Excavation, Backfill and Vegetation Installation Storm Water Prevention Plan for Zone 2, and
- 2019 USS Lead Zone 1 and Zone 3 Defined Properties Addendum to the Remediation Action Work Plan for Zone 2 and Zone 3.

4.1 Defined Residential Properties

There are seven Zone 3 residential properties to be remediated as part of this project. Four properties will be remediated along with the Zone 1 properties

NON RESPONSIVE

NON RESPONSIVE

4.1.1 Pre-Construction and Post-Construction Meetings

Prior to the start of remediation activities on a property, representatives from EPA, a Parsons representative, and the Parsons remediation sub-contractor will meet with each property owner (and tenant, with owner approval) to describe the soil sampling results as well as the remediation and restoration activities to be performed on the property. A pre-construction checklist will be utilized and discussed with the property owner. Topics to be discussed will include protection of property and yard fixtures, determination of the home occupants (both human and animal), extents of excavation area and depth, items to be saved/stored such as plants, trees, ornaments, temporary measures to remove fencing, water usage/reimbursement, foundation seepage and post-remediation restoration plans. Photo and video-documentation will record all pre-construction conditions including foundation condition from both exterior and interior, sidewalks, fencing, etc. The property owner will sign off on the pre-construction checklist before work commences.

For the three properties located at

NON RESPONSIVE

NON RESPONSIVE

Parsons will prepare a summary of the preconstruction and restoration meetings associated with each property. Any agreements discussed during the meeting, will be listed in the summary. In addition, pre-existing conditions will be documented through photos and figures. Each summary report with the associated photos and figures will be used as guidance for the project team to restore each property as close as possible, to the pre-existing conditions and as noted on the restoration agreement.

A post-construction checklist will be utilized and discussed with the property owner describing the restoration of the property including but not limited to water usage and replacement of exterior items, trees, shrubs, sod and/or gravel. The property owner will sign off on all proposed post construction/restoration items before work begins. Additionally, the property owner will sign the post-construction checklist upon completion of the property restoration.

4.1.2 Excavation of Impacted Soils

Excavation of impacted soil at the residential sites will be accomplished by either conventional mechanical means or by manual excavation. The application of each technique will be dependent on site access. Conventional mechanical methods will be used in areas where a mini-excavator and skid-steer loader can be mobilized once fencing or other structures can be temporarily removed. All other areas will be remediated by the manual excavation method. It is anticipated that manual excavation will be required in areas adjacent to structures, under tree drip lines, near underground utilities, and in areas of smaller aerial extent.

The depth of excavation will be based on the Excavation, Backfill and Restoration Plans presented in Figures 7 through 13 for the seven residential sites. Excavation adjacent to the foundation of structures or other permanent structures (e.g. sidewalks, patios, driveways, or alleys) shall begin at zero inches from the structure and proceed at a one-to-one slope (45-degree angle). If Summit and Parsons determine that the structural integrity of the permanent structure is poor, then the one-to-one slope will start at a distance no closer than six inches from the structure. Surficial soil shall be excavated at a minimum depth of one-to-two inches. To preserve the integrity of fence posts and the possibility that the posts are set in concrete, excavation adjacent to fence posts will proceed at a 1:1 slope starting at six inches away from the post. If soil is left around a post for support prior to starting the 1:1 slope, the top two inches of soil around the post shall be scraped off where feasible to remove surficial contaminated soil.

The depth of the excavation will be determined using laser level for larger excavation areas and carpenters level/tape measure for smaller excavation areas. Once the final depth of the excavation is reached, the excavation will be surveyed, and information will be provided to Parsons for review and approval. Once approval has been provided, backfilling will commence immediately. Note that the final excavation depth for the residential property at NON RESPONSIVE will be determined by XRF in accordance with the 2019 USS Lead Zone 1 and Zone 3 Defined Property Addendum to the Exterior Field Sampling Plan for Zone 2.

The mechanical excavation crew and the manual excavation crews will work in close proximity to each other so that excavation of a property is accomplished in the shortest time practical.

Sidewalks and surface structures will be protected during excavation activities. Plywood or rubber mats will be placed over sidewalks where equipment crosses the sidewalk. Other surface structures will be moved away from excavation activities, where practical, or will be protected by orange fence, caution tape, or similar means.

All excavation equipment such as excavators, skid-steers, shovels, and haul trucks will be brushed/scraped clean of soil adhering to the equipment. Tracks, tires, buckets and tools will be visually inspected prior to removal from each property. Prior to demobilizing from a

property existing streets, sidewalks, driveways, and permanent structures will be swept clean with brooms and industrial cleaning equipment, if necessary.

4.1.3 Transportation of Impacted Soils

Trucks will be staged and moved to each property according to the approved transportation routes shown on Figure 14. Once on the property, the trucks will be positioned as needed to be loaded by the excavation operator. The routing of the haul trucks will be adjusted as necessary to address any traffic flow concerns. A spotter will be used to direct the trucks into position prior to loading.

Prior to exiting the excavation site or temporary storage area, the haul trucks will be inspected by the truck driver and other on-site personnel to make sure tires are clean and there are no dirt clods that may fall onto the roadway from the haul truck. The haul trucks will travel at all times with the tarp or canopy covering the truck bed.

4.1.4 Backfill of Excavation

Backfilling of the excavations will be accomplished by either conventional mechanical means or by manual means. The application of each technique will be dependent on the accessibility of the mechanical equipment to the excavated area. The mechanical methods will be used in areas where a skid-steer loader can access the area. All other areas will be backfilled using manual methods.

Sidewalks and surface structures will be protected during backfilling activities. Plywood or rubber mats will be placed over sidewalks where equipment crosses the sidewalk. Other surface structures will be moved away from excavation activities, where practical, or will be protected by orange fence, caution tape, or similar means.

Backfill material will consist of two types, general backfill and topsoil. Descriptions of these materials is provided in the project specifications. The clean, backfill materials will be delivered to the site via the same haul routes shown in Figure 14. The haul trucks will travel at all times with the tarp or canopy covering the truck bed.

The backfill will be placed in uniform horizontal lifts of 6 inches (maximum) and compacted to 90 percent maximum dry density. Backfill shall be compacted to a minimum of 95 percent maximum dry density beneath gravel walkways, gravel parking areas, gravel driveways, or beneath movable structures.

The backfill will be compacted with a manually operated compactor (i.e. jumping jack, plate compactor, walk-behind pad-foot roller). Backfill will not be placed in excavations with standing water or unstable sub-grade conditions. Backfill material will be placed in such a manner that does not disturb or damage underground utilities, structures, and tree roots.

Final grade will match pre-existing conditions with light modifications to improve drainage as needed. Topsoil will be placed and compacted in one 6-inch lift followed by placement of sod in accordance with the specifications. The topsoil will be compacted with a roller manually pulled across the surface. Any undulations created by the roller will be raked smooth and rolled again until the topsoil surface is smooth and even.

The backfill material will be transported from the staging area to the properties via single axle haul trucks. The material will be placed at the residential property and then moved into the excavation via a skid-steer loader or manually. Haul trucks containing backfill will not be driven across an open excavation to prevent cross contamination of surrounding surfaces.

An Indiana-licensed professional surveyor will be on site as needed to confirm the excavation has been completed in accordance with the design and at various stages of backfilling. The following progress surveys will be conducted on a 10-ft by 10-ft grid.

- 1) Existing grade prior to excavation,
- 2) Base of excavation, and
- 3) Top of imported soil.

5.0 SITE RESTORATION

Site restoration includes restoring each of the nine properties to conditions similar to their pre-excavation conditions and as agreed during the pre-construction meeting with each property owner. Restoration activities will include but will not be limited to the following activities.

- Remove orange construction fence and erosion control;
- Install sod in the excavated areas where turf grass is specified and to be installed in accordance with the specifications (Section 32 92 23, Sod);
- Replace trees and plants that were removed as a result of the excavation activities. Replacement trees, shrubs, and perennials will be planted as required in the specifications (Spec Section 32 93 00);
- Replace gravel, stone, mulch, etc.;
- Return and placing any semi-permanent structures that were removed to facilitate excavation (lawn edging, pavers, fence, etc.);
- Return any lawn items or other property removed during excavation (lawn furniture, swing sets, etc.);
- Repair fences to pre-existing conditions or install new fencing (Note that temporary orange fencing installed at the property boundary will not be removed until the permanent fencing is repaired or new permanent fencing is installed);
- Repair any concrete, brick pavement or other items damaged during construction; and
- Maintain the sod, plants, trees, etc. as needed during the maintenance period.

Summit or a subcontractor will perform maintenance watering to establish sod and new plantings for the specified periods. If allowed by the property owner, Summit or subcontractor will use water from the hose bib from the property to water the lawn and plants for that property. Parsons will coordinate collecting the city water bill from the property owners and Summit will reimburse property owner for the entire water bill during any month when water is used. For vacant property or if the property owner will not allow use of water from the hose bib, Summit or subcontractor will use a portable tank with a pump and hosing to water the lawn and plants.

6.0 REFERENCES

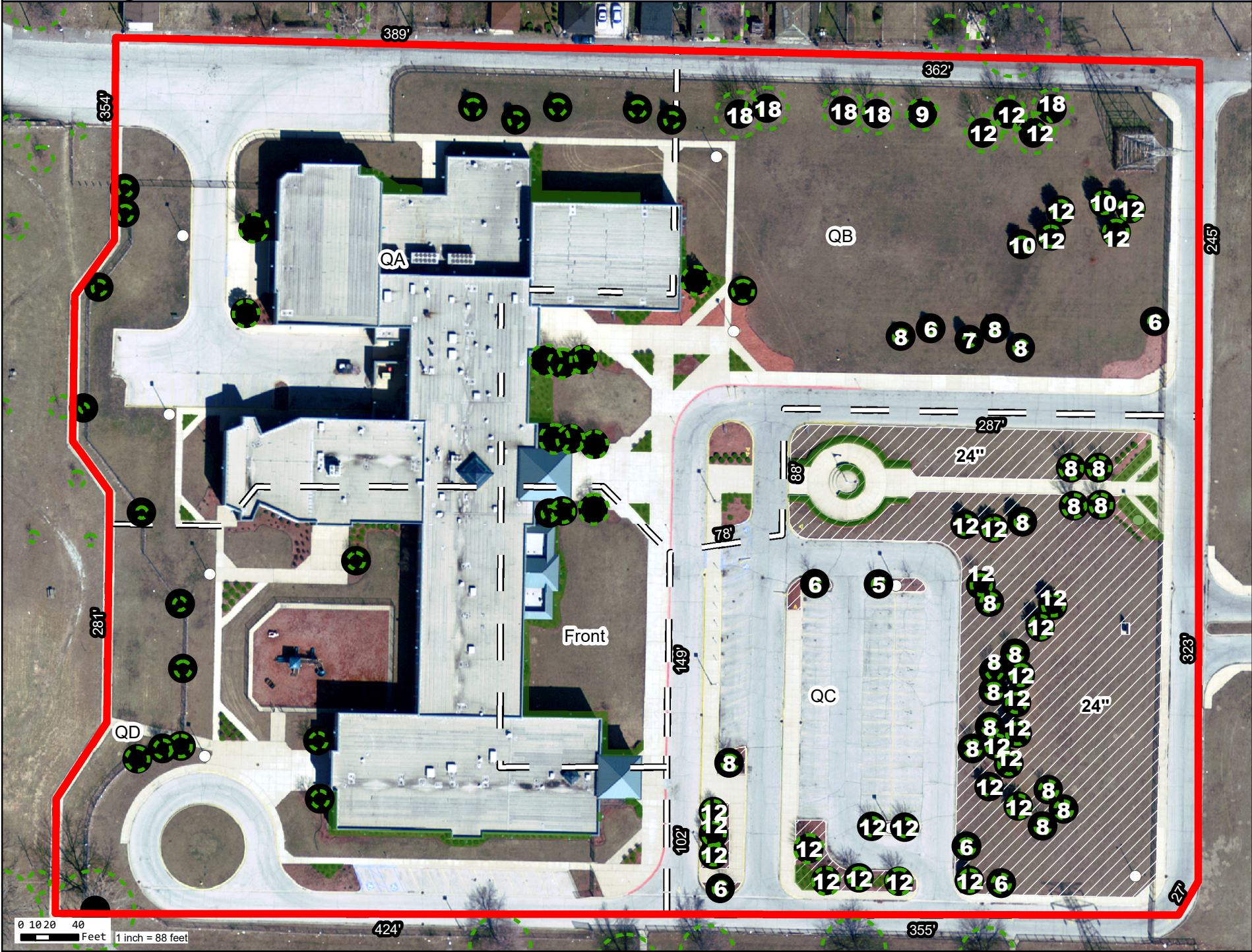
- CH2M HILL (CH2M). 2017. Quality Assurance Project Plan, USS Lead Site, Zone 3, East Chicago, Indiana, WA No. 226-RARA-053J, Contract No. EP-S5-06-01. April.
- Parsons. 2018. Addendum to the Data Management Plan for Zones 2 and 3, USS Lead Superfund Site East Chicago, Lake County, Indiana, May
- Parsons. 2018. Emergency Response Plan for Zones 2 and 3, USS Lead Superfund Site East Chicago, Lake County, Indiana, May
- Parsons. 2018. Exterior Field Sampling Plan for Zones 2 and 3, USS Lead Superfund Site East Chicago, Lake County, Indiana, May
- Parsons. 2018. Health and Safety Plan (HASP) for Zones 2 and 3, USS Lead Superfund Site East Chicago, Lake County, Indiana, May
- Parsons. 2018. Interior Residential Sampling and Dust Cleaning Plan for Zones 2 and 3, USS Lead Superfund Site East Chicago, Lake County, Indiana, May
- Parsons. 2018. Quality Assurance Project Plan (QAPP) for Zones 2 and 3, USS Lead Superfund Site East Chicago, Lake County, Indiana, May
- Parsons. 2018. Remedial Action Work Plan (RAWP) for Zones 2 and 3, USS Lead Superfund Site East Chicago, Lake County, Indiana, May
- Parsons. 2018. Resident Communication Plan for Zones 2 and 3, USS Lead Superfund Site East Chicago, Lake County, Indiana, April
- Parsons. 2018. Stormwater Pollution Prevention Plan (SWPPP) for Zones 2 and 3, USS Lead Superfund Site East Chicago, Lake County, Indiana, May
- Parsons. 2018. Temporary Storage Transportation and Disposal Plan (TSTDTP) for Zones 2 and 3, USS Lead Superfund Site East Chicago, Lake County, Indiana, May
- Parsons. 2018. Traffic Management Plan for Zones 2 and 3, USS Lead Superfund Site East Chicago, Lake County, Indiana, May
- Parsons. 2019. Global Modifications to 2018 Zone 2 UAO for Updating Supporting Plans Required for 2019 USS Lead Zone 1 and 3 Defined Properties, May
- SulTRAC. 2017. Draft Remedial Design for Zone 3 Properties, U.S. Smelter and Lead Residential Area Superfund Site, East Chicago, Lake County, Indiana. February.
- SulTRAC. 2018. Final Remedial Design for 100 Zone 2 Properties, U.S. Smelter and Lead Residential Area Superfund Site, East Chicago, Lake County, Indiana. January.
- Tetra Tech, Inc. 2017. Final Sampling and Analysis Plan for Zone 2 and 3 Residential Inspection. USS Lead Site. March.
- U.S. Environmental Protection Agency (EPA). 1995. "Good Laboratory Practices" in Principles and Guidance to Regulations for Ensuring Data Integrity in Automated Laboratory Operations.
- U.S. Environmental Protection Agency (EPA). 2003. Superfund Lead-Contaminated Residential Sites Handbook. OSWER #9285.7-50. September.
- U.S. Environmental Protection Agency (EPA). 2006. Guidance on Systematic Planning Using the Data Quality Objectives Process. EPA QA/G-4. February.

- U.S. Environmental Protection Agency (EPA). 2008. *Test Methods for Evaluating Solid Waste, Physical and Chemical Methods*. SW-846, 3rd Edition, Update III, Section 1.
- U.S. Environmental Protection Agency (EPA). 2009. Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use, EPA OSWER No. 920.1-85, EPA 540-R-08-005. January 13.
- U.S. Environmental Protection Agency (EPA). 2012. Record of Decision, US Smelter and Lead Refinery, Inc. Superfund Site, Operable Unit 1, East Chicago, Indiana. November.
- U.S. Environmental Protection Agency (EPA). 2012. Uniform Federal Policy for Quality Assurance Project Plans- Optimized UFP-QAPP Worksheets.
- U.S. Environmental Protection Agency (EPA). 2016a. *National Functional Guidelines for Inorganic Superfund Methods Data Review*. EPA-540-R-2016-001. September.
- U.S. Environmental Protection Agency (EPA). 2016b. *National Functional Guidelines for Superfund Organic Methods Data Review*. EPA-540-R-2016-002. September.

FIGURES

This page intentionally left blank

Final Design



Sample Data (concentrations shown in milligrams per kilogram - mg/kg)

455 E 148th St										
Depth	Front - Lead	Front - Arsenic	QA - Lead	QA - Arsenic	QB - Lead	QB - Arsenic	QC - Lead	QC - Arsenic	QD - Lead	QD - Arsenic
0-6 in	75	10 U	72	11 U	44	9 U	350	11	62	11 U
6-12 in	43	9 U	73	15	71	10 U	230	8	87	11 U
12-18 in	Native Sand (NS)	Native Sand (NS)	56	9 U	85	12 U	236	17 U	40	9 U
18-24 in	Native Sand (NS)	Native Sand (NS)	47	9 U	78	11 U	810 J	11	Native Sand (NS)	Native Sand (NS)
24-30 in	Native Sand (NS)	Native Sand (NS)	51	9 U	478	55	282	20 U	Native Sand (NS)	Native Sand (NS)

J - Estimated / U - Non-Detect / NS - Not Sampled

Notes

Sampling Notes

QA: 1: native sand @ 11" 2: native sand @ 12" 3: native sand @ 10" 4: 30"+ 5: native sand @ 20"
QB: 1: native sand @ 16" 2: native sand @ 26" 3: native sand @ 9" 4: refusal @ 20" 5: refusal @ 28"
QC: 1: native sand @ 9" 2: native sand @ 13" 3: 30"+ 4: refusal @ 24" 5: refusal @ 21"
QD: 1: native sand @ 13" 2: native sand @ 10" 3: refusal @ 18" 4: native sand @ 12" 5: native sand @ 18"
Front: 1: native sand @ 12" 2: native sand @ 11" 3: native sand @ 10" 4: native sand @ 11" 5: native sand @ 12"

Design Notes

Quadrant A requires no remediation.
Quadrant B requires no remediation.
Excavation depth is 24 inches for quadrant C.
Quadrant D requires no remediation.
Front yard requires no remediation.

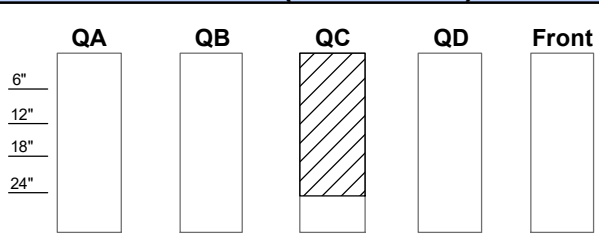
Property Zoning Category:

Residential

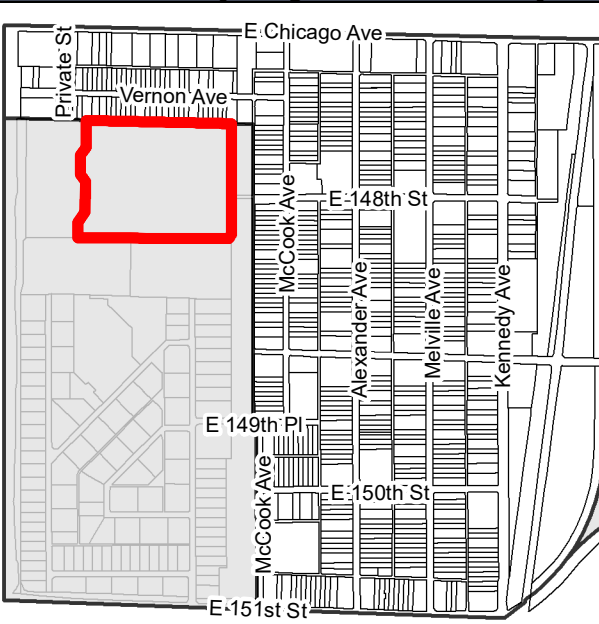
Data from samples collected at other locations at the site suggest soils with lead concentrations greater than 2,000 mg/kg may exceed TCLP criteria.

Date of Aerial Image: February, 2013

Cross Sections (not to scale)



Zone 1 - Property Location Map



Design Information

Access agreement:

Date sampled: QC: 5/1/2015 11:00:00 AM
QA: 5/1/2015 9:15:00 AM QD: 5/1/2015 8:30:00 AM
QB: 5/1/2015 9:45:00 AM Front: 8/19/2015

Restoration agreement:

Quantities

Total Mechanical Excavation Volume: 3549 cu yd
Total Manual Excavation Volume: 71 cu yd


Type	Units	QA	QB	QC	QD	Front
Mechanical Excav. Vol.	cu yd	0	0	3,549	0	0
Manual Excav. Vol.	cu yd	0	0	71	0	0
Compacted Backfill Vol.	cu yd	0	0	2,662	0	0
Compacted Topsoil Vol.	cu yd	0	0	958	0	0
Sod Area	sq yd	0	0	5,961	0	0
Basal Barrier Needed		No	No	No	No	No

Legend

- Property Boundary
- Yard Boundary
- Area to be Remediated
- Tree (Trunk Diameter in Inches)
- Tree Canopy
- Bushes
- Utility Pole / Fire Hydrant

Revisions/Review


#	Date	Drawn By	QC'd By	Date



US SMELTER & LEAD REFINERY
LAKE COUNTY, EAST CHICAGO, INDIANA

FIGURE 1: 455 E 148th St
Parcel # 450328351043000024
Property ID: 84

EPA REGION 5 RAC 2 | Date Created: 3/1/2017 | Drawing #: 122





0 25 50 100 Feet

	455 148th QC Yard Area
	455 148th Quadrant Boundary
Remediation Plan	
	No Excavation
	Excavate 18-24"
Sample Location	
	Excavate 18-24"
	No Excavation

PARSONS

Parsons Environment and Infrastructure Group
10 S. Riverside Plaza
Chicago, IL

Prepared by:
GP

Date: 7/2/2019

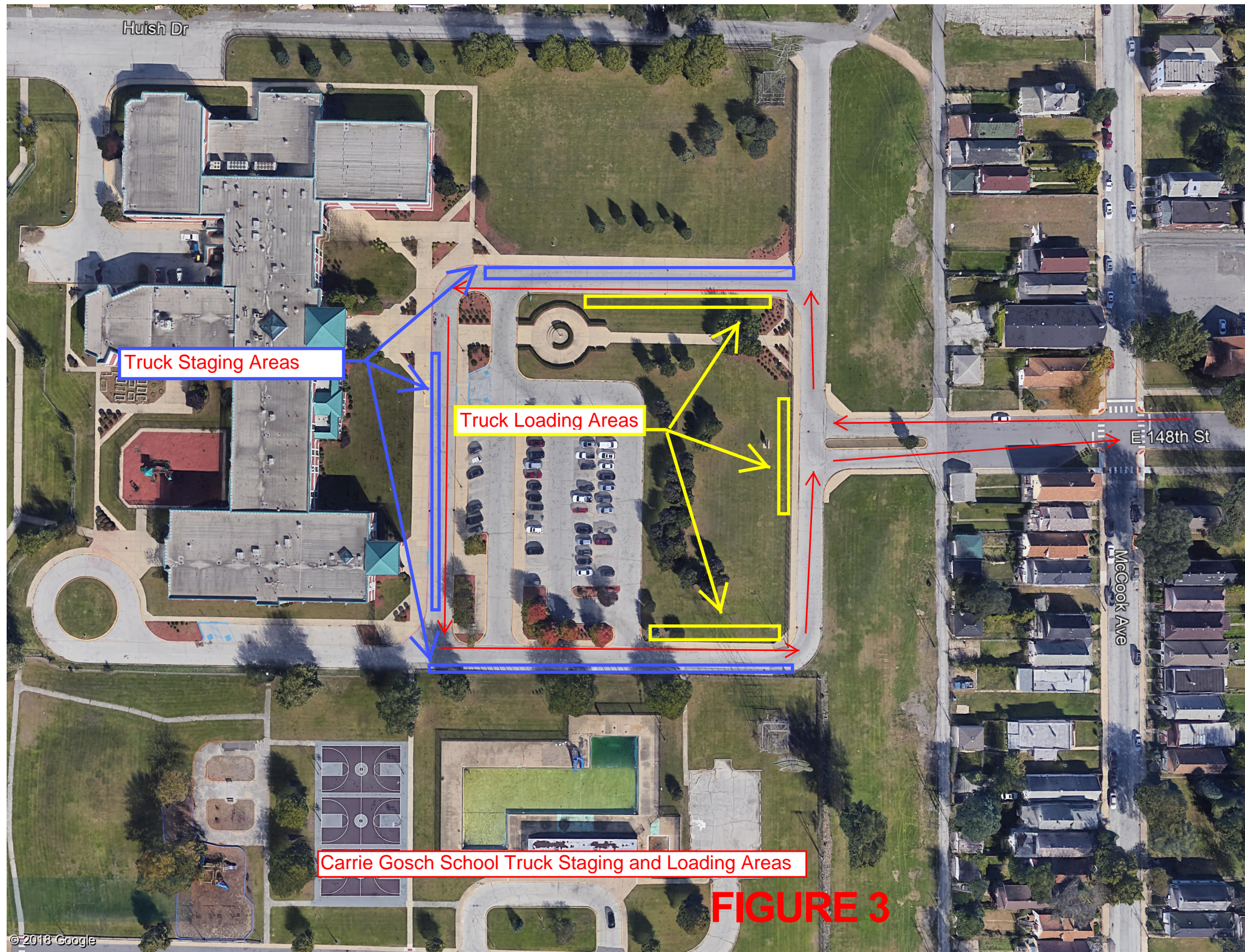
Reviewed by:
KWL

Figure No: 2

Filename: CarrieGoschSchool_Samples_new .mxd

Figure: 2
Carrie Gosch School
Quadrant C Sample Results

Chemours East Chicago Facility
East Chicago, Indiana



Truck Staging Areas

Truck Loading Areas

Carrie Gosch School Truck Staging and Loading Areas

FIGURE 3



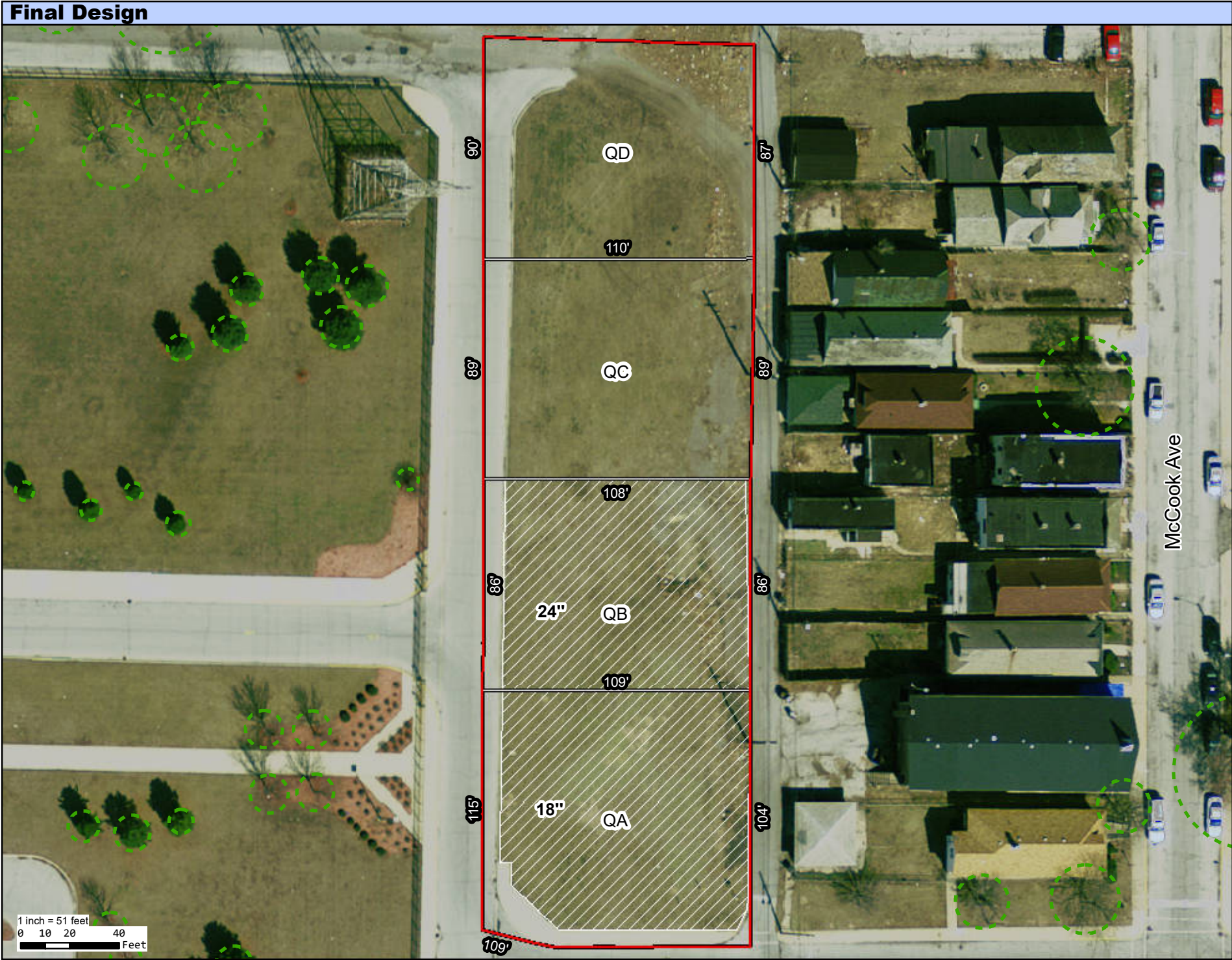
Area outlined in black show excavation areas

Utility Corridor 3

Carrie Gosch School

FIGURE 4

Traffic Control Route for Carrie Gosch School and the Utility Corridor Property



Notes

Sampling Notes
QA: 1: native sand @ 21" 2: native sand @ 24" 3: native sand @ 24" 4: native sand @ 17" 5: 30"
QB: 1: 30" 2: 30" 3: native sand @ 28" 4: native sand @ 27" 5: native sand @ 18"
QC: 1: 30" 2: refusal @ 24" 3: 30" 4: 30" 5: 30"
QD: 1: native sand @ 22" 2: native sand @ 21" 3: 30" 4: native sand @ 27" 5: native sand @ 24"

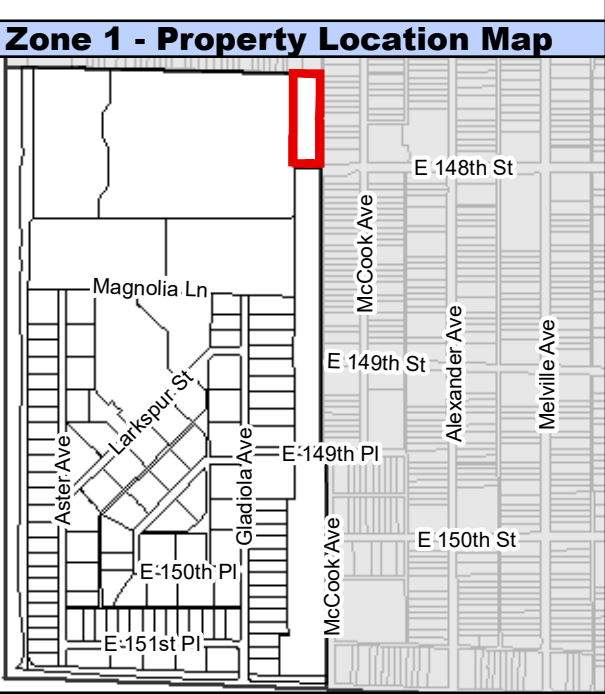
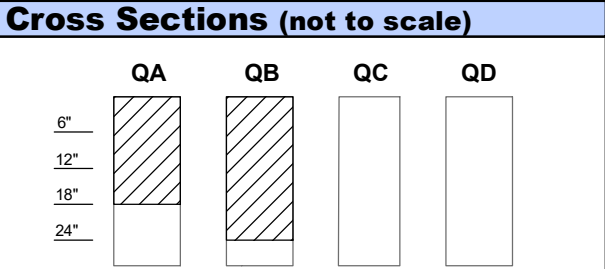
Design Notes
Excavation depth is 18 inches for quadrant A.
Excavation depth is 24 inches for quadrant B.
Quadrant C requires no remediation.
Quadrant D requires no remediation.

Pipelines running from north to south on eastern side of property

Property Zoning Category:
Commercial

Data from samples collected at other locations at the site suggest soils with lead concentrations greater than 2,000 mg/kg may exceed TCLP criteria.

Date of Aerial Image: February, 2013



Design Information

Access agreement: 12/10/2009

Date sampled:
QA: 4/30/2015 QC: 4/30/2015
QB: 4/30/2015 QD: 4/30/2015

Restoration agreement:

Quantities

Total Mechanical Excavation Volume: 1,156 cu yd
Total Manual Excavation Volume: 0 cu yd

Type	Units	QA	QB	QC	QD
Mechanical Excav. Vol.	cu yd	524	631	0	0
Manual Excav. Vol.	cu yd	0	0	0	0
Compacted Backfill Vol.	cu yd	350	473	0	0
Compacted Topsoil Vol.	cu yd	175	158	0	0
Sod Area	sq ft	9,437	8,522	0	0
Basal Barrier Needed		No	No	No	No

Legend

Property Boundary

Yard Boundary

Area to be Remediated

Revisions/Review

#	Date	Drawn By	QC'd By	Date

Sample Data (concentrations shown in milligrams per kilogram - mg/kg)

Corridor 3								
Depth	QA - Lead	QA - Arsenic	QB - Lead	QB - Arsenic	QC - Lead	QC - Arsenic	QD - Lead	QD - Arsenic
0-6 in	270	10	233	18 U	83	12 U	143	15 U
6-12 in	370	13	190	17 U	147	16	158	16 U
12-18 in	670	20	1013	49	57	10 U	208	17 U
18-24 in	270	17	429	31	249	19 U	380	13
24-30 in	48	10 U	294	20 U	1463	53	400 ^	22 U
J - Estimated / U - Non-Detect / NS - Not Sampled / ^ - Laboratory Equivalent XRF Data								



Truck Loading Area

Truck Staging Areas

Utility Corridor Staging and Loading Areas

FIGURE 6

